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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,071	02/17/2004	David C. Lizon	ADEP.01USU1	9469
27479	7590	11/17/2005		
COCHRAN FREUND & YOUNG LLC 2026 CARIBOU DR SUITE 200 FORT COLLINS, CO 80525			EXAMINER FRANK, RODNEY T	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H-2

<b>Office Action Summary</b>	<b>Application No.</b> 10/780,071	<b>Applicant(s)</b> LIZON ET AL.	
	<b>Examiner</b> Rodney T. Frank	<b>Art Unit</b> 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11, 13-15 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 5, 12 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 13-15 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Sinha (U.S. Patent Number 6,889,560).

The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With regard to claim 13, Sinha discloses a method for measuring liquid level in a container which comprises the steps of (a) generating at least two acoustic resonances in the liquid substantially perpendicular to the surface of the liquid, and (b) determining the frequency of at least two acoustic resonances. These limitations are shown in view of figures 1a through 1c and the disclosure in column 4 beginning at line 15 and ending in column 6 with line 17.

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With regard to claim 14, the method for measuring liquid level in a container as described in claim 13, wherein the acoustic resonances are generated using a waveform comprising a sine wave is disclosed in column 4 lines 26 through 31.

With regard to claim 15, the method for measuring liquid level in a container as described in claim 14, wherein the sine wave is swept over frequencies comprising at least one acoustic wall resonance of a wall of the container perpendicular to the surface of the liquid is disclosed in column 6 lines 10 through 14.

With regard to claim 20, a method for measuring liquid level in a container which comprises the steps of (a) generating at least two acoustic resonances in the liquid substantially parallel to the surface of the liquid, and (b) detecting the presence of acoustic resonances from the liquid. These limitations are shown in view of figures 1a through 1c and the disclosure in column 4 beginning at line 15 and ending in column 6 with line 17.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6-11, and 17-19 are rejected under 35 U.S.C. 103(a) as being obvious over Sinha.

The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art

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only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

With regard to claims 1, 6, 17, 18, and 19, the basic limitations of the claims are disclosed in the Sinha reference in view of figures 1a-1c and the disclosure, specifically, an apparatus for measuring liquid level in a container which comprises in combination (a) a transducer in physical contact with the outside of a wall of the container for generating at least two acoustic resonance responses in the liquid substantially perpendicular to the surface (transducer 10a); (b) a sweep generator for electrically exciting said transducer over a chosen range of acoustical frequencies and having a chosen waveform (16, 20, and 26), and (c) a receiver for measuring the acoustic frequencies for at least two resonant responses (transducer 10b), wherein the various independent apparatus claims are mere variations of the independent claim 1, and thus

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since claim 1 characterizes the overall breath of the claims, only that claim is used to describe the claims of this rejection. In a similar fashion, all these claims contain a similar limitation that is not specifically disclosed in the Sinha reference with regard to the placement of the transmitting transducer, whereby said transducer is to be located below the surface of the liquid. The Sinha reference has the transducer located above the liquid surface, however one of ordinary skill in the art would be able to simply place the transducer on the bottom of the vessel to be measured because the basic principle for operation established in the art is that the transducer signals are transmitted and reflected off a surface of the liquid level to be measured. Therefore, one skill in the art could arrange the transmitting transducer either above or below the liquid surface without altering the operation of the device, and therefore the mere rearrangement of the transducer location would not be considered novel in view of the Sinha reference. One would be motivated to change the placement of the device, for example, for ease of replacement in an overhead pipe system in a building as the transducer being on the bottom would be easier to service or replace in the event of failure.

With regard to claims 2, 8, and 9, Sinha discloses in column 4 lines 15 through 30 the use of a swept sine wave generator.

With regard to claims 3, and 10, column 5 lines 10 through 30 disclose the use of the fast Fourier Transform for analyzing the resonance responses.

With regard to claims 4, and 11, the examiner acknowledges that the Sinha reference discloses that it is preferred that a frequency range between wall resonances are used (see column 6 lines 5 through 30), however, this same section discloses the

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fact that any frequency range could be used, thus a frequency range including at least one acoustic wall resonance would be disclosed by Sinha.

With regard to claim 7, figures 1a and 1b show an apparatus comprising an acoustic transmitter (10a) and an acoustic receiver (10b).

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

### ***Allowable Subject Matter***

6. Claims 5, 12, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The devices and method claimed whereby the waveform comprises a continuous frequency modulated waveform taking on the form as indicated is not disclosed nor deemed obvious in view of the prior art of record.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The examiner has cited various references deemed to be relevant to the general state of the art of the present invention.

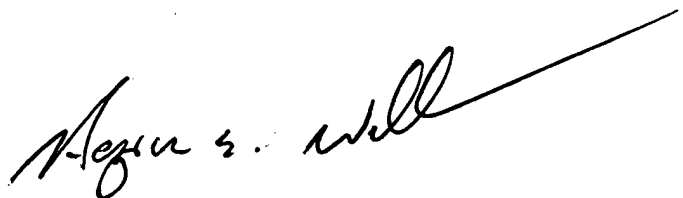
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (571) 272-2193. The examiner can normally be reached on M-F 9-5:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTF  
November 10, 2005

A handwritten signature in black ink, appearing to read "Hezron E. Williams", with a long, sweeping horizontal line extending to the right.

HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800